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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/723,077	11/27/2000	Daisuke Suzuki	8409-000042	4247

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FREUDENBERG-NOK GENERAL PARTNERSHIP
INTELLECTUAL PROPERTY DEPT.
47690 EAST ANCHOR COURT
PLYMOUTH, MI 48170-2455

EXAMINER	
WILLS, MONIQUE M	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/723,077	SUZUKI	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *51-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *51-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed December 10, 2003. The objection of claims 1-19 and 30 is overcome. The rejection of claims 1-19 under 35 U.S.C. 112, second paragraph, is overcome. The rejection of claims 36, 38 & 41-44 under 35 U.S.C. 112, second paragraph, is overcome. The rejection of claims 5,16 and 31 under 35 U.S.C. 112, second paragraph, is overcome. The rejection of claims 1-19 and 29-50 under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234 and further in view of Winsel U.S. Patent 3,660,166, is overcome. The new grounds of rejections are as follows:

- Claims 51-52, 54, 59-60, 70,71,77, 79 & 81-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al., U.S. Patent 6,399,234.
- Claims 53, 61-62, 64,65, 68, 69, 75,78 & 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, in view of Wilson et al. U.S. Patent 6,207,310.
- Claims 55,56, 72 & 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Debe et al. U.S. Patent 5,910,378.

- Claims 58 & 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Harada U.S. Patent 5,399,184.
- Claims 57 & 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Koschany et al. U.S. Patent 6,183,898.
- Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, in view of Wilson et al. U.S. Patent 6,207,310 as applied to claim 61 above, and further in view of DeMarinis et al. U.S. Patent 6,368,476.
- Claims 66,67are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, in view of Wilson et al. U.S. Patent 6,207,310 and further in view of Debe et al. U.S. Patent 5,910,378.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 51-52, 54, 59-60, 70,71,77, 79 & 81-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al., U.S. Patent 6,399,234.

Bonk teaches a gasket assembly for a fuel cell including an elastomer seal (abstract). With respect to claims 51 & 70, the assembly 10 includes: a cathode substrate 32 (first carrier) and anode substrate 34 (second carrier) each having a first side and a second side, wherein the first and second sides provide opposite sides of the carrier member (Fig. 2); an elastomeric member 206 of silicon polymer (col. 9, lines 45-55 & col. 10, lines 35-40), wherein the elastomeric member 206 has a base portion and a sealing portion projecting above the base portion (Fig. 5); a pressure sensitive adhesive layer 62 & 60 bonded to the carriers 32 & 34 respectively (Fig. 2 and col. 7, lines 1-10); the . Further concerning claim 51, the PEM is a proton exchange membrane (ion exchange membrane). See column 2, lines 35-40. The elastomer material may be attached to carriers 32 & 34 (col. 10, lines 35-40). With respect to claims 52 & 90-91, the elastomeric member is a silicon polymer (col. 9, lines 45-55). With respect to claims 54 & 77, the sealing bead 206 has an apex above the base, and the apex has a height H_2 between the apex and the base, and the sealing bead is compressible into the base, reducing the apex height to zero (Fig. 5). With respect to claims 59 & 60 the thickness of the carrier material is less than 0.005 inches (0.127 mm). See col. 7, lines 55-60. With respect to claim 71, the sealing bead has a semi-elliptical shape (Fig. 5). With respect to claims 82 & 83, the apex is compressed into the base portion of up to 100% of the height of the apex above the base portion

(Fig. 5). With respect to claim 86, the adhesive layer is a pressure sensitive adhesive (col. 7, lines 1-10). With respect to claim 89, the adhesive is a silicon base adhesive (col. 7, lines 5-10).

Bonk is silent to the pressure sensitive adhesive being disposed against an ion-exchange polymer membrane (claim 51), the layer order of the gasket constituents (claim 70). The reference does not expressly disclose the sealing bead shape factor (claims 79,81,83, 84 and 85) or making the elastomer by reaction curing, and employing a pressure sensitive adhesive derived from adhesive bonded to the - carrier member prior to reaction curing (51, 70 & 87-88).

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ pressure sensitive adhesive against the ion-exchange polymer membrane of Bonk, to improve the liquid seal around the membrane electrode assembly (claim 51), because the deforming nature minimizes the need for machine precision of the sealing parts.

As to the layer order of the gasket constituents (claim 70), it would have been obvious to arrange the elastomeric member 206 and pressure sensitive adhesive (62 or 60) around the electrode (32 or 34), because such modification would merely require rearranging the elastomeric member, and since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Concerning the sealing bead shape factors (claims 79,81, 83, 84 and 85), it would be reasonable to expect the sealing beads of Bonk to have the same shape factors as the subject invention because they are made from the same material and have the same shape. More specifically, the sealing beads of Bonk may also be fabricated from silicon polymer (col. 9, lines 45-55).

With respect to claims 51,70 & 87-88, the claims require making the elastomer by reaction curing, and employing a pressure sensitive adhesive derived from adhesive bonded to the carrier member prior to reaction curing. Even though product - by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product - by - process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ. In the instant case, even though the elastomer and pressure sensitive adhesive were made by different processes, claims 51 & 70 are unpatentable because it appears that the final product made of Bonk is the same as the subject invention, unless Applicant's can show that the process materially changes the final product.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 53, 61-62, 64,65, 68, 69, 75,78 & 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, in view of Wilson et al. U.S. Patent 6,207,310.

Bonk teaches an elastomeric gasket assembly as described herein above. With respect to claim 61, the gasket assembly comprises a first carrier member 32 having a first side and a second side, and a second carrier member 34, having a first side and a second side, the membrane (48) polymer is adhesively bonded to the to the first and second carrier members (col. 6, lines 50-68), the proton exchange membrane (ion exchange membrane) has a first side and second side, the elastomer material may be attached to carriers 32 & 34 forming first and second elastomeric members (col. 10, lines 35-40). See Figure 2. With respect to claim 64, the sealing bead 206 has an apex above the base, and the apex has a height H_2 between the apex and the base, and the sealing bead is compressible into the base, reducing the

apex height to zero (Fig. 5). With respect to claims 68 & 69, the thickness of the carrier material is less than 0.005 inches (0.127 mm). See col. 7, lines 55-60.

Bonk is silent to the elastomeric members comprising tab portions, wherein the tab portion are disposed against the gas diffusion layer (claims 53 & 61), a tab portion having a mechanically engaging exterior shape consisting of a partial square shape, partial triangle shape, partial arcuate shape or partial polygonal shape (claims 62 , 78 & 80), a tab with an adhesive portion (claim 65, 78) and a tab portion coplanar with the base portion upper surface of the elastomeric member (claim 75). The reference does not expressly disclose, making the elastomer by reaction curing, and employing a pressure sensitive adhesive derived from adhesive bonded to the carrier member prior to reaction curing (claim 61).

However, Wilson teaches that it is conventional to employ tab portions (65 & 67) having a mechanically engaging exterior shape consisting of partial triangles (claims 62,78 & 80), and essentially coplanar with the gasket portion (claim 75). See Figure 4. The tabs control the compression of the cell, so that the gasket can be compressed no less than the thickness of the tabs, which assures uniform compression across each cell (col. 8, lines 40-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the tab portion of Wilson in the gasket assembly of Bonk, in order to assure uniform compression across each cell.

Regarding the tab members being disposed against the gas diffusion layer (claims 53, 61 & 75), Wilson teaches that the tabs are in direct contact with the gasket, therefore, when the tabs are employed on the sealing gaskets 206 of Bonk, the tab will press against the gas diffusion layer 32,34 (Fig. 5 and col. 7, lines 35-58). More specifically, the gasket 206 of Bonk is coextensive with the gas diffusion layers (32,34) therefore, when tabs are employed the tabs will press against said electrodes (32,34). See Figure 5 of Bonk.

Regarding the employment of a second tab portion of claim 61(a tab adjacent each carrier member), it would have been obvious to one having ordinary skill in the art at the time the instant invention was made to employ a plurality of tab portions, in order to further assure uniform compression across each cell, as taught by Wilson.

Concerning the tabs having an adhesive portion (claims 65 & 78), Bonk demonstrates employing adhesives to bond different portions of the fuel cell stack (col. 7, lines 1-10), therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to adhesively attach the tab portion, to maintain proper alignment of the fuel cell constituents.

Concerning the sealing bead shape factors (claim 69), it would be reasonable to expect the sealing beads of Bonk to have the same shape factors as the subject invention because they are made from the same material. More specifically, the sealing beads of Bonk may also be fabricated from fluoropolymers and thermoplastic elastomers.

With respect to claim 61, the claims require making the elastomer by reaction curing, and employing a pressure sensitive adhesive derived from adhesive bonded to the carrier member prior to reaction curing. Even though product - by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product - by - process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ. In the instant case, even though the elastomer and pressure sensitive adhesive were made by different processes, claim 61 is unpatentable because it appears that the final product made of Bonk is the same as the subject invention, unless Applicant's can show that the process materially changes the final product.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 55,56, 72 & 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Debe et al. U.S. Patent 5,910,378.

Bonk teaches the elastomeric gasket assembly as described hereinabove, including electrode carriers comprising carbon and a fluoropolymer (col. 7, lines 50-58).

Bonk is silent to electrodes comprising a polyamide (claims 55,56,72 &73).

Debe et al. U.S. Patent 5,910,378 teaches the equivalence of polyamides and fluopolymers for as binder material in gas diffusion electrodes (col. 8, lines 30-35 & lines 55-65).

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Bonk does not teach electrode carriers comprising polyamides, Debe teaches that fluorpolymers and polyamides are art recognized equivalent materials for binder materials in gas diffusion electrodes, and therefore, one having ordinary skill in the art would have substituted one polymer for the other.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 57 & 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Koschany et al. U.S. Patent 6,183,898.

Bonk teaches the elastomeric gasket assembly as described hereinabove, including electrode carriers comprising carbon (col. 7, lines 50-58).

Bonk is silent to an electrode carrier comprising stainless steel.

Koschany teaches that it is conventional to employ stainless steel in gas diffusion electrodes to increase conductivity of the electrodes (col. 3, lines 1-8).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made, because even though Bonk is silent to an electrode carrier comprising stainless steel, Koschany teaches that it is conventional to employ stainless steel in electrodes to increase electrode conductivity.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 58 & 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, as applied to claims 51 & 70 above, further in view of Harada U.S. Patent 5,399,184.

Bonk teaches the elastomeric gasket assembly as described hereinabove, including electrode carriers comprising carbon paper (col. 7, lines 35-40).

Bonk is silent to an electrode comprising woven fabric.

Harada teaches the equivalence of carbon paper and woven fabric as electrode materials in gas diffusion electrodes.

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Bonk does not teach electrode carriers comprising woven fabrics, Harada teaches that carbon paper and woven fabrics are art recognized equivalent electrode materials in gas diffusion electrodes, and therefore, one having ordinary skill in the art would have substituted one material for the other.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, in view of Wilson et al. U.S. Patent 6,207,310 as applied to claim 61 above, and further in view of DeMarinis et al. U.S. Patent 6,368,476.

Bonk in view of Wilson teach the elastomeric gasket assembly as described hereinabove.

Bonk is silent to the carrier electrode comprising a web.

DeMarinis teaches that it is conventional to employ webs in gas diffusion electrodes (abstract).

It would have been obvious to one having ordinary skill in the art at the time the instant invention was made to employ the web of DeMarinis in the electrode of Bonk, in order to increase structural integrity of the electrode.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 66,67are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. U.S. Patent 6,399,234, in view of Wilson et al. U.S. Patent 6,207,310 and further in view of Debe et al. U.S. Patent 5,910,378.

Bonk in view of Wilson teach the elastomeric gasket assembly as described hereinabove, including a tab portion and electrode carriers comprising carbon and a fluoropolymer (col. 7, lines 50-58).

Bonk is silent to electrodes comprising a polyamide (claims 66 & 67).

Debe et al. U.S. Patent 5,910,378 teaches the equivalence of polyamides and fluopolymers for as binder material in gas diffusion electrodes (col. 8, lines 30-35 & lines 55-65).

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Bonk does not teach electrode carriers comprising polyamides, Debe teaches that fluorpolymers and polyamides are art recognized equivalent materials

for binder materials in gas diffusion electrodes, and therefore, one having ordinary skill in the art would have substituted one polymer for the other.

Response to Arguments

Applicant's arguments, filed December 10, 2003 with respect to the rejection(s) of claim(s) 1-19 & 29-50 under Bonk 6,399,234 in view of Winsel 3,660,166, have been fully considered have been considered but are moot in view of the new ground(s) of rejection above.

Conclusions

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date

of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mw

04/10/04

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